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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,944

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Klaus Sommermeyer

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EXAMINER

WHITE, EVERETT NMN

ART UNIT

PAPER NUMBER

1623

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,944	SOMMERMEYER, KLAUS	
	Examiner	Art Unit	
	EVERETT WHITE	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 61 and 63-79 is/are pending in the application.
- 4a) Of the above claim(s) 67-79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61 and 63-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed April 29, 2011 has been received, entered and carefully considered. The amendment affects the instant application accordingly:
 - (A) Claims 1-60 and 62 have been canceled;
 - (B) Claims 61 and 70 have been amended;
 - (C) Comments regarding Office Action have been provided drawn to:
 - (I) the disclosure objection, which has been withdrawn in view of amendment to the specification;
 - (II) 112, 1st paragraph rejection, which has been withdrawn in view of the amendment and argument presented by Applicant.
 - (III) 103(a) rejection, rendered moot by new ground of rejection over newly cited US Patent.
2. Claims 61 and 63-79 are pending in the case. Claims 67-79 are withdrawn from consideration.

Claim Rejections - 35 USC § 112

New Ground of Rejection

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 61 and 63-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The description of the compound name “carbonic diester of hydroxyethyl starch” is too generic and vague which renders the claims indefinite. It is not clear if the compound is drawn to a starch having 2 ester groups attached to the starch or if the compound is drawn to a carbonate group having 2 starch compounds attached to the carbonate group. It is not clear in the claim where the carbonic acid group is attached to the starch, nor has such attachment been described in the specification. It appears that a structure of the compound is needed to adequately described the compound being claimed or a more detailed name of the compounds that are being claimed should be recited in the claims.

It is not clear what alcohol component of the carbonic diester is being referred to. Page 9, 7th paragraph describes the carboxylic acid diesters as being N,N-succinimidyl carbonate and sulfo-N,N-succinimidyl carbonate. Hence, the phrase "carbonic diester" referred to in Claim 61 is much too vague to be in reference to the compounds N,N-hydroxysuccinimide and sulfo-N,N-hydroxysuccinimide, which renders Claim 61 indefinite.

5. Applicant's arguments with respect to Claims 61 and 63-66 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

New Grounds of Rejection

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 61 and 63-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tessler (US Re. 28,809, already of record) in view of Mizutani (US Patent No. 4,009,264, newly added) or Benedict (US Patent No. 2,744,894, already of record).

Applicant claims an aprotic-solvent-soluble carbonic diester of hydroxyethyl starch (HES), having a mean molecular weight Mw in the range 2000-300000 Dalton, a degree of substitution MS between 0.1 and 0.8, and a C2/C6 ratio of the substituents on the carbon atoms C2 and C6 of the anhydroglucoses between 2 and 15, and having a mean content of from 1:1 to 10:1 of carbonic diester substituents per HES molecule.

The Tessler patent discloses starch esters having the formula:



wherein St represents a starch component (see column 4, line 25), wherein the formula falls within the definition of carbonic diester of a starch product as recited in instant Claim 61. The dependent claims (Claims 62-66) do not recite any features that indicate a starch ester that is different from the starch ester described in the Tessler patent.

The instantly claimed carbonic diester of hydroxyethyl starch differs from the above described product of the Tessler patent by claiming that the starch component thereof is a hydroxyethyl starch.

The Mizutani patent shows that chemical reactions between a carbonate and hydroxyethyl starch to form a carbonic ester of hydroxyethyl starch is known in the art. See Example 6 in column 12 of the Mizutani patent wherein a hydroxyethyl starch carbonate is prepared.

The Benedict et al patent suggests improvements in water-solubility from hydroxylalkyl etherification as being applicable to starches, particular hydroxyethyl ether (see column 1, lines 15-30). The Benedict et al patent teaches the hydroxyalkyl starches as being useful as thickener agents, stabilizers for colloidal mixtures or mixtures for suspending solid particles (see column 7, lines 35-40).

One having ordinary skill in the art would have been motivated to combine the teaching of the Tessler patent with the teaching of the Mizutani patent and Benedict et al patent since the documents are interested in increase stability of the starch products in aqueous compositions.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the starch moiety recited in the formulas of the Tessler patent with a hydroxyethyl starch moiety in view of the recognition in the art, as evidenced by the Mizutani patent and Benedict et al patent, that hydroxyethyl starch provides greater stability for aqueous compositions compared to starch containing aqueous compositions.

8. Applicant's arguments with respect to Claims 61 and 63-66 have been considered but are moot in view of the new ground(s) of rejection.

9. Claims 61 and 63-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buysch et al (US Patent No. 5,068,321, already of record) in view of Mizutani (US Patent No. 4,009,264, newly added) or Benedict (US Patent No. 2,744,894, already of record).

Applicant claims an aprotic-solvent-soluble carbonic diester of hydroxyethyl starch (HES), having a mean molecular weight Mw in the range 2000-300000 Dalton, a degree of substitution MS between 0.1 and 0.8, and a C2/C6 ratio of the substituents on the carbon atoms C2 and C6 of the anhydroglucoses between 2 and 15, and having a mean content of from 1:1 to 10:1 of carbonic diester substituents per HES molecule.

The Buysch et al patent discloses carbonic acid esters of polysaccharides with a degree of substitution of 0.5 to 3.0 wherein the starch and dextrans are suitable starting materials. Buysch et al teaches the use of the polysaccharide carbonate for additives in cosmetics, flocculating agents for wastewater treatment, and for fixing enzymes (see column 7, lines 5-10 and 15-20)

The instantly claimed carbonic diester of hydroxyethyl starch differs from the carbonic acid esters of starch of the Buysch et al patent by claiming that the starch component thereof is a hydroxyethyl starch.

The Mizutani patent shows that chemical reactions between a carbonate and hydroxyethyl starch to form a carbonic ester of hydroxyethyl starch is known in the art. See Example 6 in column 12 of the Mizutani patent wherein a hydroxyethyl starch carbonate is prepared.

The Benedict et al patent suggests improvements in water-solubility from hydroxyalkyl etherification as being applicable to starches, particular hydroxyethyl ether (see column 1, lines 15-30). The Benedict et al patent teaches the hydroxyalkyl starches as being useful as thickener agents, stabilizers for colloidal mixtures or mixtures for suspending solid particles (see column 7, lines 35-40).

One having ordinary skill in the art would have been motivated to combine the teaching of the Buysch et al patent with the teaching of the Mizutani patent and Benedict et al patent since both documents are interested in the solubility properties of starch products in aqueous compositions.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the starch moiety recited in the formulas of the Buysch et al patent with a hydroxyethyl starch moiety in view of the recognition in the art, as evidenced by Mizutani patent and Benedict et al patent, that hydroxyethyl starch provides greater solubility for aqueous compositions compared to starch containing aqueous compositions.

10. Applicant's arguments with respect to Claims 61 and 63-66 have been considered but are moot in view of the new ground(s) of rejection.

11. Claims 61 and 63-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaertner et al (US Patent No. 2,868,781, already of record) in view of Mizutani (US Patent No. 4,009,264, newly added) or Benedict (US Patent No. 2,744,894, already of record).

Applicant claims an aprotic-solvent-soluble carbonic diester of hydroxyethyl starch (HES), having a mean molecular weight Mw in the range 2000-300000 dalton, a degree of substitution MS between 0.1 and 0.8, and a C2/C6 ratio of the substituents on the carbon atoms C2 and C6 of the anhydroglucoses between 2 and 15, and having a mean content of from 1:1 to 10:1 of carbonic diester substituents per HES molecule.

The Gaertner et al patent discloses biscarbohydrate esters of dicarboxylic acids of the formula:



wherein S and S' in the formula represent a carbohydrate that may selected as starch (see column 2, line 11 and lines 55-58), which embraces the carbonic diester starch product recited in the instant claims. The dependent claims (Claims 63-66) do not recite any features that indicate a starch ester that is different from the starch ester described in the Gaertner et al patent.

The instantly claimed carbonic diester of hydroxyethyl starch differs from the above described product of the Gaertner et al patent by claiming that the starch component thereof is a hydroxyethyl starch.

The Mizutani patent shows that chemical reactions between a carbonate and hydroxyethyl starch to form a carbonic ester of hydroxyethyl starch is known in the art. See Example 6 in column 12 of the Mizutani patent wherein a hydroxyethyl starch carbonate is prepared.

The Benedict et al patent suggests improvements in water-solubility from hydroxylalkyl etherification as being applicable to starches, particular hydroxyethyl ether (see column 1, lines 15-30). The Benedict et al patent teaches the hydroxyalkyl starches as being useful as thickener agents, stabilizers for colloidal mixtures or mixtures for suspending solid particles (see column 7, lines 35-40).

One having ordinary skill in the art would have been motivated to combine the teaching of the Gaertner et al patent with the teaching of the Mizutani patent and Benedict et al patent since both documents are interested in the solubility properties of starch products in aqueous compositions.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the starch moiety recited in the formulas of the Gaertner et al patent with a hydroxyethyl starch moiety in view of the recognition in the art, as evidenced by the Mizutani patent and Benedict et al patent, that hydroxyethyl starch provides greater solubility for aqueous compositions compared to starch containing aqueous compositions.

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12. Applicant's arguments with respect to Claims 61 and 63-66 have been considered but are moot in view of the new ground(s) of rejection.

Summary

13. Claims 61 and 63-66 are rejected; Claims 67-79 are withdrawn from consideration as being directed to non-elected inventions.

Examiner's Telephone Number, Fax Number, and Other Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is 571-272-0660. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Everett White/
Examiner, Art Unit 1623

/SHAOJIA ANNA JIANG/
Supervisory Patent Examiner, Art Unit 1623